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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,188	04/07/2004	Thomas Beckmann	510.1100	7423
23280 7590 02/04/2008 Davidson, Davidson & Kappel, LLC 485 17th Avenue 14th Floor New York, NY 10018			EXAMINER AKRAM, IMRAN	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 02/04/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/820,188	Applicant(s) BECKMANN ET AL.	
	Examiner Imran Akram	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 11/15/07 have been fully considered but they are not persuasive.
2. In response to Applicant's arguments regarding the Vidalin reference: Regarding claims 1, 3, 8, and 16, Applicant argues that Vidalin does not show a separator device configured to selectively separate the hydrogen-containing reformat gas into hydrogen and a residual gas. Examiner respectfully disagrees. As can be seen in figure 2 of Vidalin, the separator device **22** separates the steams into carbon dioxide and hydrogen/carbon monoxide. Since hydrogen is a component of one of the streams, the claim is anticipated. Furthermore, claim 16 is anticipated by paragraph 52 to paragraph 55 (not the paragraphs individually), as these paragraphs recite equilibrium equations for hydrogen production. By the nature of the reactions and separation processes, some amount of hydrogen—however minute—will be retained in the carbon dioxide stream as 100% separation is impossible using Vidalin's process.
3. In response to Applicant's arguments regarding the Barbir reference: Regarding claims 1, 5-7, and 10, while Barbir does indeed disclose that recirculating other gases with hydrogen results in decreased power and efficiency, it still anticipates the claim as Barbir indicates this to be a possibility. The apparatus is capable of residual gas circulation. Regarding claim 5, Barbir discloses a diaphragm pump that pumps hydrogen from upstream of the separator to downstream of the separator (paragraph 31). There is no indication of the pump being used in lieu of the separator and that it will

"pump anything that gets in front of the suction mouth," as Applicant asserts on page 8 of arguments.

4. In response to applicant's argument that Michelfelder is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Michelfelder discloses an invention for recirculation for the reduction of contaminants—a goal of Barbir. Regarding claim 2, Michelfelder may disclose the recirculation of solids as Applicant argues on page 9 of Argument, but Michelfelder also discloses the recirculation of gases (column 2, lines 37-56). Both Michelfelder and Barbir disclose inventions involving catalytic hydrogen reformation, so one of ordinary skill could look from one reference to the other for improvements.

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., second recirculation location) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). While neither Faye nor Barbir may disclose a second recirculation location between the reformer and enrichment device individually, the combination of said references for the reasons given below would yield such an arrangement. Examiner disagrees with the assertion that Faye teaches away from recirculation of gases. Barbir discloses recirculation for the reasons below and it is the combination of the references that would yield predictable results.

7. As the rejections of claim 1 stand, as do the rejections of claims 9 and 10-15.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3, 8, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Vidalin (US 2002/0085963 A1).

10. Regarding claims 1 and 8, Vidalin discloses a gas generation system, comprising: a steam reformer **10** for producing a hydrogen-containing reformat gas

using raw materials, at least a first of the raw materials containing hydrogen and carbon (paragraph 49); a separator device **22** configured to selectively separate the hydrogen-containing reformat gas into hydrogen (**26**) and a residual gas (**24**); a recirculation system for recirculating an amount of the residual gas from a first location downstream **24** of the separator device to a second location upstream from the separator device **62**.

11. Regarding claim 3, Vidalin discloses the second location is in an entry area where the raw materials enter the reformer (see figure 2).

12. Regarding claims 16-20, the separation process at **22** includes some hydrogen, carbon monoxide, water vapor, and fuel in the residual gas (see paragraphs 52 to 55)

13. Claims 1, 5-7, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Barbir (US 2004/0142215 A1).

14. Regarding claim 1, Barbir discloses a reformer for producing a hydrogen-containing reformat gas using raw materials, at least a first of the raw materials containing carbon and hydrogen; a separator device configured to selectively separate the hydrogen-containing reformat gas into hydrogen and a residual gas; a recirculation system for recirculating an amount of the residual gas from a first location downstream of the separator device to a second location upstream from the separator device. (see paragraph 42).

15. Regarding claim 5-7, Barbir discloses a diaphragm pump that selectively pumps hydrogen for a recirculation system as a transport device (see paragraph 31).

16. Regarding claim 10, Barbir discloses a gas generation system configured to generate a hydrogen-containing gas from one of a liquid hydrocarbons and hydrocarbon derivatives for operating a fuel cell (see abstract).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbir as applied to claim 1 above, and further in view of Michelfelder (US 4,461,224).

21. Regarding claim 2, Barbir does not disclose the detail of the recirculation location being directly in front of the separator device. Michelfelder discloses the second location is directly in front of the separator device (See figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to circulate the residual gas in front of the separator device as Barbir is capable of doing as much and Michelfelder teaches the advantages of doing as much: to increase purity, efficiency, and yield.

22. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbir as applied to claim 1 above, and further in view of Faye (US 2003/0170514).

23. Barbir does not disclose an enrichment device configured to enrich the hydrogen-containing reformat gas with hydrogen disposed between the reformer and the separator device, wherein the second location is between the reformer and the enrichment device. Faye, however, discloses a shift-stage (paragraph 11) between the reformer **17** and separation device **15** capable of enriching the reformat gas with hydrogen. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an enrichment device in Barbir to “clean” the reformat and increase hydrogen content for better efficiency of the process—a known concept.

24. Claims 9, and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barbir as applied to claim 1 above, and further in view of Keefer (US 2002/0098394 A1).

Regarding claims 9 and 11, Barbir does not disclose the use of an autothermal reformer or the type of fuel used in the process. Keefer, however, discloses the use of an autothermal reformer in conjunction with gasoline (paragraph 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an autothermal reformer as they are more appropriate for the processing of heavier fuels—such as one of the most common: gasoline—as taught by the Keefer.

Regarding claims 12-15, Barbir does not disclose the intended use of the fuel cell apparatus. Keefer, however, discloses the device as an auxiliary power unit for automobiles (paragraph 13). Automobiles are read to include internal combustion engines. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the fuel cell apparatus of Barbir as a power unit for any transportation device with an internal combustion engine as this prevalent use of fuel cell systems and patents.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Imran Akram whose telephone number is 571-270-3241. The examiner can normally be reached on 10-7 Monday through Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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